



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/758,848

01/16/2004

Prakash Parayil Mathew

138221 (15284US01)

6933

23446 7590 10/08/2008
MCANDREWS HELD & MALLOY, LTD
500 WEST MADISON STREET
SUITE 3400
CHICAGO, IL 60661

EXAMINER

SHAHRESTANI, NASIR

ART UNIT

PAPER NUMBER

3737

MAIL DATE

DELIVERY MODE

10/08/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 05/27/2008 have been fully considered but they are not persuasive. Examiner respectfully disagrees with applicant's position that the cited prior art reference(s) fail to teach the claimed limitations. Examiner holds that an array of transducers is at least made up of a single element transducer and that the structure as taught by the Bertora reference of record, is sufficient to provide for the functions as described by applicant's claimed limitation. The rejections as stated in the Office Action dated 02/26/2008 are maintained.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6-11, 13-16, are rejected under 35 U.S.C. 103(a) as being unpatentable over Philips (U.S. 6,213,947) in view of Golland et al. (U.S. 2004/0006271 A1) and in further view of Bertora (U.S. 2005/0004459 A1).

Philips teaches a method for improved ultrasound imaging comprising: Encoding an ultrasound signal with a code to produce an encoded ultrasound vector (fig. 1 - 20A); transmitting from a first location said encoded ultrasound vector at desired angles (fig. 12); receiving at a second location an encoded echo signal produced in response to said encoded

Art Unit: 3737

ultrasound vector; and decoding said encoded echo signal using said code used to produce said encoded ultrasound vector (fig.1 – 22a, 22m, 24a, 24m); and obtaining an image of an object based on encoded ultrasound signals (column 9 lines 10-16). Philips further teaches wherein said transmitter comprises a transducer array (fig. 11), and distinct codes for each ultrasound signal within a frame (abstract). Philips further teach the transducer (element 12) being coupled to transmit and receive switches (element 12) in order to regulate the arrangement of transmit vs. receive transducers, and providing within the broadest reasonable interpretation, at least one transducer being independent.

Philips does not teach receiving at a second location and encoded signal produced in response to said encoded ultrasound vector without receive beamforming said encoding signal.

In the same field of endeavor, Golland et al. teach methods and systems for construction of ultrasound images (title), providing methods and systems for generating ultrasound images in real-time without utilizing beamforming either in transmission of ultrasound wave into a region of interest or in processing echoes received from scatterers present in the region in response to the transmitted waves (par. 0045).

It would have been obvious to one of ordinary skill in the art at the time of invention to have modified the apparatus and method as taught by Philips and to have incorporated the teachings of Golland et al. in order to eliminate the need for excess components such as a beamformer and to rely solely on the utilization of encoded echo signals when forming an image.

Philips in view of Golland et al. teach all the above mentioned limitations, including switching the function of transducers (i.e. transmit to receive) but do not specifically teach

Art Unit: 3737

wherein said second location comprises a single element transducer, separate from and independent of said transmitting transducer array, dedicated to said echo signals.

Bertora teaches an ultrasonic imaging method and apparatus wherein two separate and distinct groups of transducers are shown (fig. 7), one of which dedicated to transmission, and the other for reception of echo signals. Furthermore, Bertora clearly teaches that the receiving transducers may be composed of a single receiving transducer (See claim 11).

It would have been obvious to one of ordinary skill in the art at the time of invention to have modified the apparatus and method as taught by Phillips in view of Golland et al. and to have incorporated the teachings of Bertora and to have provided for separate distinct transducers in order to eliminate the need for switching the functionality of one array of transducers.

Claims 2-5 & 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Philips (U.S. 6,213,947) in view of Golland et al. (U.S. 2004/0006271 A1) in further view of Bertora (U.S. 2005/0004459 A1) and in further view of Stein (U.S. 2002/0100326)

Regarding claims 2-5, Philips in view of Golland et al. in view of Bertora teach all the limitations of claim 1 but do not teach determining a position of a structure producing an encoded echo in response to impact based on a time of transmission or based on an angle of transmission. Stein teaches a method for determining a position using a device (element 310) for determining a location of a transducer/echo producing structure based on time of transmission and angle of transmission (par. [0069]).

It would have been obvious to one of ordinary skill at the time of the invention to have modified the method as taught by Philips in view of Golland et al. in view of Bertora, and to

Art Unit: 3737

have further included the steps of determining a position of an echo producing structure such as a transducer as taught by Stein in order to provide for measuring ultrasonic properties of an object in a manner which is independent of travel time measurements within the object (see Stein par. [0032]).

Regarding Claims 17-21, Philips in view of Golland et al. in view of Bertora teach all the limitations of claim 10 but do not teach a processor for determining position of a scatterer based on a time of transmission or angle of transmission. Stein teaches a processor (computer 50) that is used in conjunction with a timer (timer 48) and a scatterer (transducer 44) that emits echoes at various angles and is capable of determining a position of said scatterer (par. [0069]).

It would have been obvious to one of ordinary skill at the time of the invention to have modified the method as taught by Philips in view of Golland et al. in view of Bertora, and to have further included the steps of determining a position of an echo producing structure such as a transducer as taught by Stein using a processor in order to provide for minimal human intervention and to provide for measuring ultrasonic properties of an object in a manner which is independent of travel time measurements within the object (see Stein par. [0032]).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

Art Unit: 3737

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NASIR SHAHRESTANI whose telephone number is (571)270-1031. The examiner can normally be reached on Mon.-Thurs: 7:30-5:00, 2nd Friday: 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRIAN CASLER/
Supervisory Patent Examiner, Art Unit
3737

/Nasir Shahrestani/

Application/Control Number: 10/758,848

Page 7

Art Unit: 3737

Examiner, Art Unit 3737